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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,048	12/14/2001	Liron Frenkel	3394P010	5374
8791 7590 06/01/2007 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			EXAMINER PATHAK, SUDHANSHU C	
			ART UNIT 2611	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/024,048	<b>Applicant(s)</b> FRENKEL, LIRON	
	<b>Examiner</b> Sudhanshu C. Pathak	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Feb. 26<sup>th</sup>, 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-22 is/are allowed.
- 6) ☒ Claim(s) 23-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Dec. 14<sup>th</sup>, 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-to-33 are pending in the application.

#### ***Response to Arguments***

2. Applicant's arguments, regarding Claims 23-33, filed on Feb. 26<sup>th</sup>, 2007, have been fully considered and are not persuasive. The rejection of the claims have been maintained.

In regards to the specific argument "...nothing in the prior art would lead one of ordinary skill in the art at the time of the invention to use different bit-loading rates in the opposite directions on the same channel...", this is incorrect. The AAPA discloses a SHDSL system that uses the same band for both upstream and downstream transmission (Specification, Page 3, lines 23-24). The AAPA further discloses that the noise (NEXT) level at the customer premise equipment (CPE) is lower than the noise at the central office (CO) (Specification, Page 4, lines 19-22). Tzannes discloses a DSL system performing variable bit-loading depending on the channel conditions i.e. noise in the channel (Abstract, lines 1-4, 6-8 & Paragraph 3 & Paragraph 4, lines 6-14 & Paragraph's 6-8 & Table 1 & Paragraph 53, lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Tzannes teaches bit-loading depending on the noise in the channel and this is implemented in both directions as described in SHDSL (same band for both uplink and downlink) system so as to avoid reliable communications in both directions since the noise is different at the (CPE) and the (CO) as is described in AAPA.

In regards to the specific argument that AAPA "...reveals no mention or suggestion of the baud rates at which the upstream and downstream signals are to be transmitted...", this is incorrect. The AAPA further discloses setting the communication rate to be a maximum value rate in the range that meets a signal-to-noise ratio (SNR) margin criterion at a selected baud rate (Specification, Page 1, Background of Invention, lines 1-12 & Specification, Page 2, lines 1-15 & Specification, Page 3, lines 1-15). There is no criticality in selecting the baud rate of the upstream and downstream to be substantially the same rate and using the minimum of the upstream or downstream baud rates and using a standard modulation scheme this is a matter of design choice depending on the computation complexity desired and the channel conditions. Furthermore, nowhere in the (specification, page 4, lines 3-8) does it state that setting the same baud rate "...it is critical that the upstream and downstream baud rates be the same for purposes of echo cancellation (page 4, lines 3-8, in the present patent application)..."

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 23-28 (method) & 29-33 (apparatus) are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Tzannes (2006/0188035 A1).

Regarding to Claims 23-25 & 29-31, the AAPA discloses a method for bi-directional communication, comprising: transmitting single-carrier signals comprising data symbols between first and second Digital Subscriber Line (DSL) modems including single-carrier (SHDSL) over a communication channel in upstream and downstream direction: within respective upstream and downstream transmission spectra that are at least partly mutually overlapping (Fig.'s 1-2 & Specification, Page 3, lines 18-30). The AAPA further discloses that the noise level at the customer premise equipment (CPE) is lower than the noise at the central office (CO) (Specification, Page 4, lines 19-22). However, AAPA does not disclose setting different, respective upstream and downstream bit-loading rates in bits/symbol for the symbols in the upstream and downstream directions, responsive to conditions on the channel.

Tzannes disclose setting different, bit-loading rates in bits/symbol for the symbols, responsive to conditions on the channel (Abstract, lines 1-4, 6-8 & Paragraph 3 & Paragraph 4, lines 6-14 & Paragraph's 6-8 & Table 1 & Paragraph 53, lines 1-5) {Interpretation: Tzannes discloses communication between two modems over a DSL communications system implementing adaptive modulation wherein depending on the channel conditions the modulation density (bits per symbol) are varied}. Therefore, it would have been obvious to one of ordinary skill in

the art at the time of the invention that Tzannes discloses implementing adaptive modulation for communications between modems and this can be implemented in the method as described in the AAPA so as to determine the optimal bit-loading rates for communication in the upstream and downstream directions so as to provide robust and reliable communication (higher immunity to noise) between modems and providing a lower complexity of equalization in the receiver, in varying channel conditions.

Regarding to Claims 26-28 & 32-33, the AAPA in view of Tzannes discloses a method for transmitting single carrier signals between two DSL modems wherein setting different bit-loading for upstream and downstream wherein further the bit loading upstream is lower than the loading for the downstream and the noise at the customer premise equipment (CPE) is lower than the noise at the central office (CO) as described above. The AAPA further discloses setting the communication rate to be a maximum value rate in the range that meets a signal-to-noise ratio (SNR) margin criterion at a selected baud rate (Specification, Page 1, Background of Invention, lines 1-12 & Specification, Page 2, lines 1-15 & Specification, Page 3, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Tzannes satisfies the limitations of the claims. Furthermore, there is no criticality in selecting the baud rate of the upstream and downstream to be substantially the same rate and using the minimum of the upstream or downstream baud rates and using a standard modulation scheme

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this is a matter of design choice depending on the computation complexity desired and the channel conditions.

***Allowable Subject Matter***

5. Claims 1-22 are allowable over the prior art of record.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)-272-3042.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sudhanshu C. Pathak  
Examiner  
Art Unit 2611

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER